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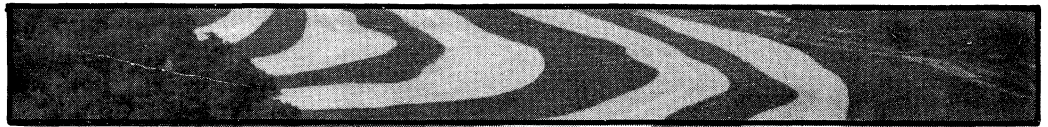
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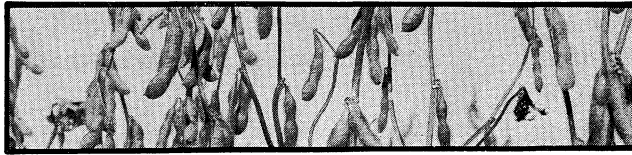
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AGRONOMY GUIDE



PURDUE
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Triticale

AY-190

Triticale

by B. J. Hankins, Extension Agronomist

INTRODUCTION

History

Ideally, farmers would like their feed grain crop to be easily planted, avoid or tolerate summer drought, mature early, and still produce an economic return. Triticale is being investigated by Purdue University agronomists as a crop which possibly fulfills these requirements.

This new small grain was developed by crossing wheat (Triticum) with rye (Secale). Like wheat and rye, varieties may be developed as either winter or spring type.

While this grain is new to most producers, plant breeders and geneticists in Sweden, Poland, Canada, and other areas, have worked with it for 100 years. However, significant breakthroughs in making this a practical agricultural crop have only come in the last 15 years. In the past, shriveled kernels and unfilled heads have characterized this crop, but improvements are being made through plant breeding.

Management

From planting through harvesting, triticale is managed in much the same way as

wheat. Similar seedbed preparations are made in advance of seeding with a drill. As a rule-of-thumb, fertilizer levels recommended for wheat are also suitable for triticale.

Research indicates that extra phosphorus may be beneficial. Some reports suggest that it should be fertilized more like corn than wheat, but these controversies remain to be resolved for Indiana.

The same equipment used for wheat harvest may also be used for triticale. It has been difficult to remove all the grain from the heads of some varieties, so, yields may be improved in the future by developing varieties which thresh easily.

Uses

Triticale is a feed grain, thus it must compete with corn rather than with wheat, in most areas of Indiana. On many of the shallow hill land soils of southern Indiana where wheat is a very low risk crop and is commonly used as a feed crop it must also compete with wheat. Feeding trials have not been run in Indiana, but in Texas research, hogs required less feed per pound of gain with triticale than with grain sorghum.

PLANT GROWTH IN INDIANA

In 1970, two varieties of triticale (203 and 204) were spring-planted in Elkhart and Tippecanoe Counties. Seeding rates of 48 and 70 pounds per acre were used, with three rates of nitrogen (40, 80, and 120 pounds per acre). The following results were recorded:

Plant height and stem traits

Some varieties of triticale grow to a height of five feet. The two varieties in these tests were about two feet tall when heads first appeared in the boot. By harvest time, variety 203 had grown to a 43-inch height and variety 204 had grown to 38 inches - roughly the same height as Arthur wheat.

Nitrogen levels as high as 120 pounds per acre were used, without causing excessive lodging. Workers in other states have reported lodging with other varieties at 60 pounds of nitrogen.

Straw

Because of the shortness of plants and the thin stands in this work, only a small amount of straw was produced. In all likelihood, the harmful effects to small seeded legumes in the field would have been comparable to wheat. In a small test near Odon, alfalfa was able to grow in a thin stand of triticale. Competition from fall seedings of this crop would probably be greater than from spring seedings because stands would be thicker.

Heads and seed

The heads of triticale have a greenish cast, similar to that of silver spruce trees. Heads almost a foot long have been reported, but those three to four inches long were more common in the varieties tested by Purdue University.

The mesh (spikelet) of triticale is similar to that of Indiana wheat in that two to three seeds are found in both. The lemma of triticale bears a long beard (awn) while that of Indiana wheat is beardless.

The seed of this new crop varies in size. Some seeds are larger than wheat, but they appear more shriveled. This undesirable trait is being improved through breeding.

Insect pests

In Northern Indiana the cereal leaf beetle was noticed on the 1970 crop. However, had the grain been seeded earlier, this problem may have been reduced. Since wheat in the same area was in an advanced stage of growth, the insects may have migrated to the more succulent triticale. Foliage feeding was obvious during the first week of June.

A second insect which contributed to loss in yield during 1970 was the wheat stem maggot. The insect was first noticed in the field at flowering time. Stems were girdled at the first joint below the head, and the infected heads appeared straw-colored. As many as 120 infected plants were counted in 1000 square feet of space, and they bore no seed in the heads. When heads first showed damage from infection, the small, white maggot could be found inside the stem.

A third observation made on the 1970 crop, was that common flies were attracted at flowering time, where sap was being exuded from unfilled flowers. Later in the season, as the heads developed, ergot appeared. At times, ergot is reported to run above the feeding tolerance levels in some presently available triticale lines.

Weed pests

One of the factors contributing to the poor 1970 response in Northern Indiana from triticale was weed competition, resulting in thin crop stands. These weeds contributed to low test weight of the grain and high moisture content at harvest time. Weeds should be a lesser problem if the grain can be fall-seeded. Broadleaf weeds may be controlled with 2, 4-D.

Growing season required

In Tippecanoe County, triticale planted at the same time as corn (May 5) was harvested

100 days later on August 12 - well in advance of the corn harvest. During this 100-day period approximately 2000 Growing Degree Days for corn had accumulated at this location. This suggests that the growing season required for spring-seeded triticale is shorter than for full season corn and that a portion of the drought period of the summer could be avoided with this crop.

The crop should produce more tillers, compete with weeds better, and produce a more profitable yield if it is fall-seeded. However, the winter tolerance of the various available varieties has not yet been tested in Indiana.

Yield

Thin stands, weed competition, drought, and insect pests contributed to lower-than-expected yields for spring-seeded triticale in 1970. Fall-seeded tests presently underway should give a more realistic evaluation of the yield potential of this crop. Seeding rates will influence yield. Table 1 contains the results

Table 1. The Influence of Seeding Rate on Triticale Yields

Variety	Seeding rate lbs/A	Yield bu/A (44 lb/bu)
203	71	32
203	48	28
204	71	21
204	48	21

of the 1970 seeding rate study. Some workers recommend a 100-pound seeding rate for better results.

Market grades of this grain have not been established, and an official test weight has not yet been set. In this experiment, test weights ranged from 40 to 57 pounds per bushel, depending primarily upon the moisture content of the grain and the amount of foreign material present.

Government programs

Triticale is not regarded as a substitute crop for wheat or feed grain programs. It is not eligible for price support.

CONCLUSIONS

Triticale has performed very well in other areas of the United States. It performed poorly in this 1970 test because of untimely operation. A comprehensive study to determine the potential of this new crop under more ideal conditions is planned for 1971.

Triticale is a new crop. For those who would like to try this new crop, it is recommended that they remove some of the risk by growing only a small acreage the first year; and that they keep in close contact with the area crops agent throughout the season. Markets for the crop should be located before seeding.